

Clarion Service Manual

Published by Service Administration Section



CRH71



UKW•MPX/MW/LW RADIO CASSETTE COMBINATION

Model

CRH71 (PE-9411A)
CRH70 (PE-9412A)
CRH61 (PE-9413A)
CRH60 (PE-9414A)

	VF-ST	Mechanism	APC, MTL
CRH71	○	SAM-2-RM4 930-0578-86	○
CRH70	×	SAM-2-RM4 930-0578-86	○
CRH61	○	SAM-2-C4 930-0572-86	×
CRH60	×	SAM-2-C4 930-0572-86	×

SPECIFICATIONS:

Radio section

Circuit system: Superheterodyne
Tuning system: Electronic tuning
Receiving frequency: LW 153kHz to 281kHz
MW 531kHz to 1,602kHz
UKW(FM) 87.5MHz to 108MHz

Intermediate frequency:

LW, MW 459kHz
UKW(FM) 10.7MHz

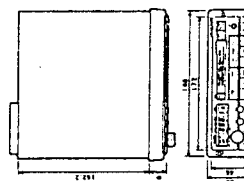
Tape section

Reproduction system: Auto reversing
4 track, 2 channel stereo
cassette tape playback
(Monaural also capable)
Tape speed: 4.76cm/sec. (1-7/8 ips)

Composite

Load impedance: $4\Omega \times 4$
Power output: $15W \times 4$
Power supply voltage: DC 14V (10.8V to 15.6V)
Negative ground
Power consumption: Less than 10A
(at max. output)

Dimensions:



Weight: CHR71, 61 1.8kg
CHR70, 60 1.7kg

- Dolby noise reduction System manufactured under license from Dolby Laboratories Licensing Corporation.
- "Dolby" and the double-D symbol $\square$ are trademarks of Dolby Laboratories Licensing Corporation.

COMPONENTS:

• PE-9411A-A, PE-9412A-A, PE-9413A-A, PE-9414A-A

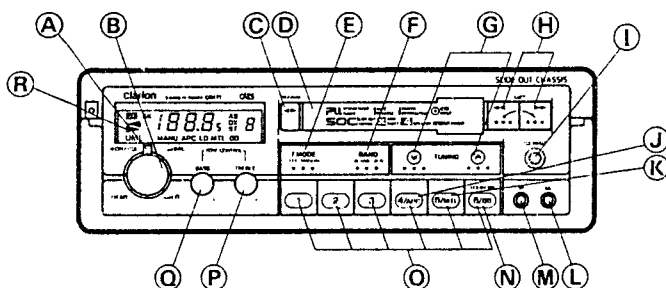
Main unit		1
Guide label	285-1097-04	1
Pass card	287-1556-00	1
Mounting bracket	300-6954-00	1
Parts bag	921-8735-00	1
Spacer	345-3653-01	1
Tap screw (5×16)	700-5016-80	1
Screw	716-0726-01	1
Nut	722-0314-00	1
Plate nut	725-0216-00	1
Parts bag	921-8744-00	1
{ Sticker	291-0041-00	2

■ FEATURES

- Electronic Quartz-Locked PLL Tuning
- One Touch Memory (12FM, 6MW/LW)
- Tuning Mode
 - FM: Manual Up/Down Tuning (50 kHz Step)
 - Seek Up/Down Tuning (50 kHz Step)
 - LW: Manual Up/Down Tuning (1 kHz Step)
 - Seek Up/Down Tuning (1 kHz Step)
 - MW: Manual Up/Down Tuning (9 kHz Step)
 - Seek Up/Down Tuning (9 kHz Step)
- AS (Automatic Station Store) for MW, LW, FM
- Super SASCII & CZ, ... Signal Actuated Stereo Control
- Auto DX/LO for SEEK
- Key-Off Pinchroller Release
- Dual Azimuth Adjustment Mechanism
- MTL, LOUDNESS, FADER, BASS/TREBLE
- APC (Automatic Program Control)
- Dolby® B Noise Reduction
- Maximum Power Output 15 W x 4
- CATS (Computer Anti-Theft System)
- Portable CD Input
- Slide Out Chassis
- LCD Display
- Night Illumination

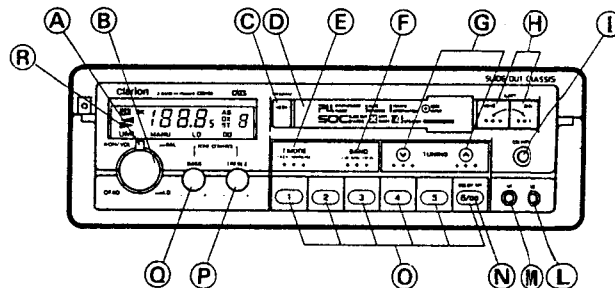
■ OPERATION:

CHR71 (CHR70)



NOTE: CHR70 ... VF → PS (Preset scan)
With out APC and MTL

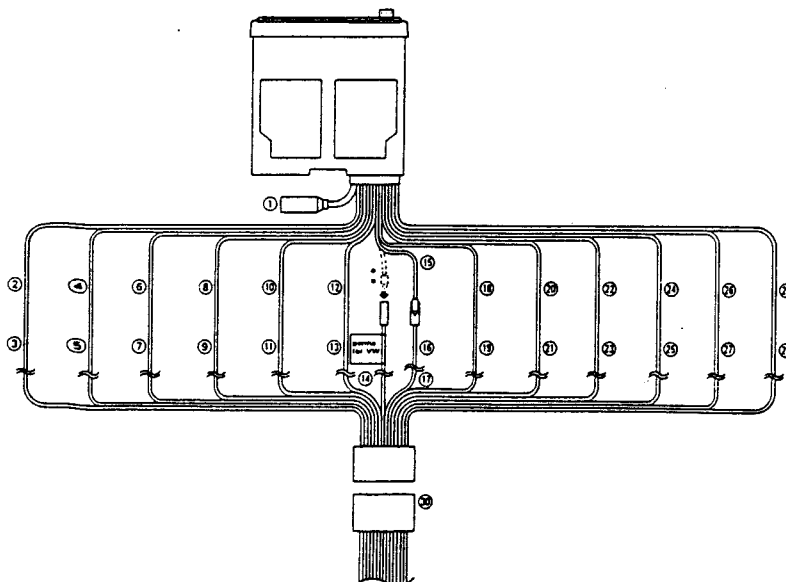
CHR61 (CHR60)



NOTE: CHR60 ... VF → PS (Preset scan)

- | | | |
|---------------------------|---|------------------------|
| Ⓐ Fader control | Ⓑ ON/VOL, pull BAL, push LD | Ⓒ Program switch |
| Ⓓ Cassette tape slot door | Ⓔ Tuning Mode switch | Ⓕ Band selector switch |
| Ⓔ UP/DOWN Tuning switch | Ⓕ Rewind/Fast Forward switch and Eject switch | |
| Ⓖ CD Input jack | Ⓖ Automatic Program Control | |
| Ⓙ Metal tape switch | Ⓙ Auto store switch | Ⓜ VF switch |
| Ⓝ Dolby B NR switch | Ⓞ Preset switch | Ⓟ Treble control |
| Ⓡ Digital Display | | Ⓠ BASS control |

■ WIRE CONNECTION/CABLAGE:



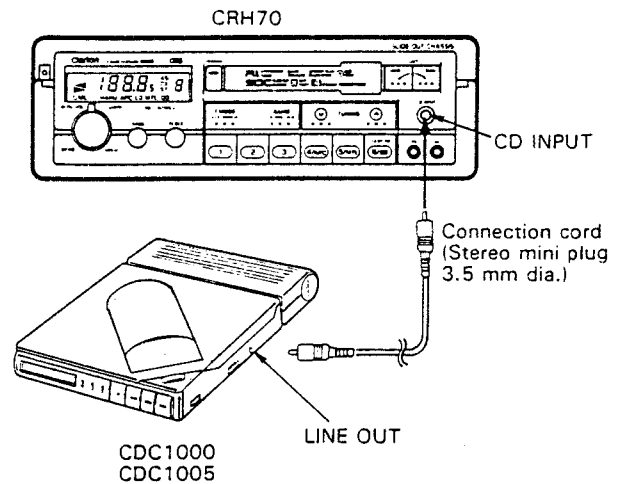
- | | |
|----------------|--------------------------|
| ① ANTENNA | ⑮ Permanent |
| ② LEFT FRONT ⊕ | ⑯ RED |
| ③ WHITE | ⑰ ACC + 12V |
| ④ LEFT FRONT ⊖ | ⑱ BLUE |
| ⑤ WHITE/BLACK | ⑲ GROUND |
| ⑥ LEFT REAR ⊕ | ⑳ BLACK |
| ⑦ WHITE/RED | ㉑ RIGHT REAR ⊖ |
| ⑧ LEFT REAR ⊖ | ㉒ GRAY/GREEN |
| ⑨ WHITE/GREEN | ㉓ RIGHT REAR ⊕ |
| ⑩ AUTO ANT. | ㉔ GRAY/RED |
| ⑪ BLUE/YELLOW | ㉕ RIGHT FRONT ⊖ |
| ⑫ ILLUMI | ㉖ GRAY/BLACK |
| ⑬ RED/WHITE | ㉗ RIGHT FRONT ⊕ |
| ⑭ RED | ㉘ GRAY |
| ⑮ RED | ㉙ Interface connecte |
| | for each car application |

- Notes:
1. When using two speakers, wire the speaker leads to either the FRONT or REAR terminals.
 2. * VW or Audi vehicles are already equipped with a permanent wire. Change the connection from the wire marked "permanent" to the wire marked "perma. for VW".
 3. Use speakers with an impedance of 4Ω and input of 15W or greater.

■ CONNECTION OF PORTABLE CD PLAYER

Portable CD players such as the CDC-1000 or CDC-1005 can be connected to the jack on the front panel.

- NOTE:**
1. If the plug is inserted into the CD jack while the tape deck is operating, the tape deck is set to the stop mode and the CD mode is set.
 2. The unit may not offer its full performance if portable CD players other than the ones specified (CDC-1000 or CDC-1005) are connected.



■ ADJUSTMENT:

Adjustment item	Adjustment point	Procedure
OV fine adjustment	IFT102	1. Tune 98.0MHz and input a 40dB 30%-modulated SSG signal. 2. Connect a digital volt meter OV TP. 3. Adjust IFT102 so that the voltage is $0V \pm 30mV$. 4. May adjust OV by receiving weak broadcasting signal.
Stop seek sensitivity (SD)	VR102	1. Tune at 98.0MHz, input a 20dB non-modulated SSG signal. 2. Adjust VR101 so that the voltage of SD TP is 5V.
Limiter (MUTE)	VR103	1. Tune at 98.0MHz, input 65dB SSG signal. 2. Adjust VR to make the set output 0dB (0.775V). 3. Reduce the output of SG 13dB. 4. Adjust VR103 untill output level decrease to 3dB.
SASC	VR101	1. Tune at 98.0MHz, input an 65dB, 7kHz modulation frequency, 30% modulation degree SSG signal. 2. Adjust the output level of the volume controller to 0dBm (0.775V). 3. Set the SSG output to 38dB and adjust VR103 so that the output level is -2dB.
MPX Separation	VR1 (880-0304A)	1. Tune at 98.0MHz, connect the output of a stereo modulator to the external modulation terminal, and input a 65dB SSG signal. 2. Set the stereo modulator to the L or R ch and adjust VR1 so that the maximum separation is obtained.
Pilot canceller	VR2 (880-0304A)	1. Tune at 98.0MHz, input a 65dB, modulation (PL 10%). 2. Adjust VR2 so that output of the set is minimum.
DK VCO (PE-9411, 9413)	VR1 (880-0201B)	1. Tune at 98.0MHz, input a 65dB 10% modulated SSG signal. 2. Connect the frequency counter to DK TP and adjust VR1 so that the counter indicates 125 Hz. In the case.
DK level (PE-9411, 9413)	VR308	1. Tune at 98.0MHz 100% (Main + PL + DK + SK + BK) modulated SSG signal, and turn on Y F. SW. 2. At the time of minimum sound volume, adjust VR308 to make the speaker output 0.775V.

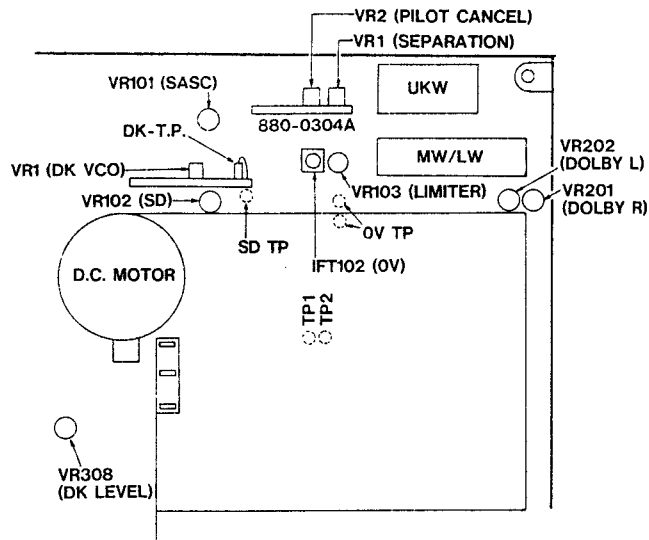
- SPECIFICATION —LIMIT— Quieting sensitivity: MW Less than 32dB (at 20dB S/N)
LW Less than 40dB (at 20dB S/N)
UKW Less than 12dB (at 30dB S/N)

Stereo separation: UKW More than 20dB

● DOLBY Circuit

Item	Adjustment point	Adjustment
Dolby NR	VR201 and VR202	Insert a Dolby level test tape (400Hz–200nWb/m), connect the millivoltmeter to TP1 and TP2, and adjust VR201 and VR202 to obtain an output of 245mV. (DOLBY SW : OFF)

● ADJUSTMENT POINT



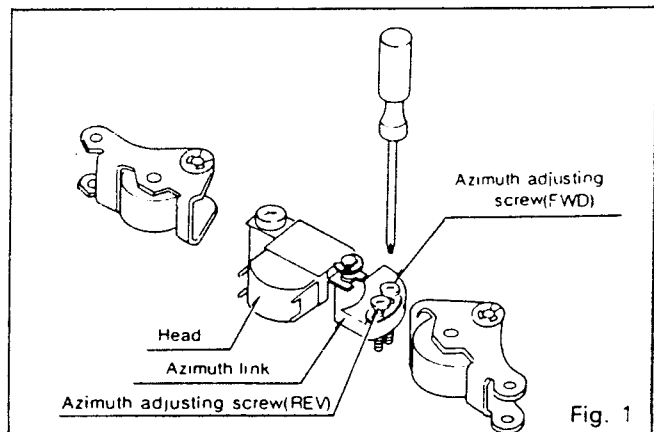
■ TAPE MECHANISM

1. Head-azimuth Adjustment

Make playback for the azimuth-tape (8kHz, –10VU), and turn each azimuth-adjusting screw to make each FWD & REV maximum. After adjustment, make adhesion with bond.

● SPECIFICATION –LIMIT–

Wow & flutter : Less than 0.25%(W.R.M.S.)



■ EXPLANATION OF IC's:

Refer to description in IC service manual vol 1.

TC4066BP	051-0267-00	Quad Bilateral Switch	P39
BT3S501	051-0606-00	Tone Control	P23

Refer to description in IC service manual vol 2.

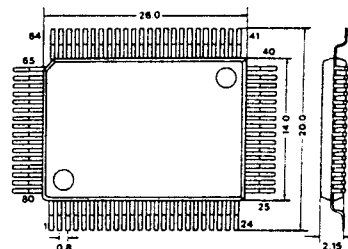
AN6263N	051-0561-01	Music interval Detection	P42
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Refer to description in IC service manual vol 3.

LB0354	051-0619-01	Loudness with Muting	P22
TA8205AH	051-0958-01	15W Power Amp	P24
CXA1102P	051-1038-00	Dolby B NR System	P14
S-8053ALR	051-1148-00	C-MOS Voltage Detector	P43

■ LC7230-8236 051-1141-02 Tuner controller

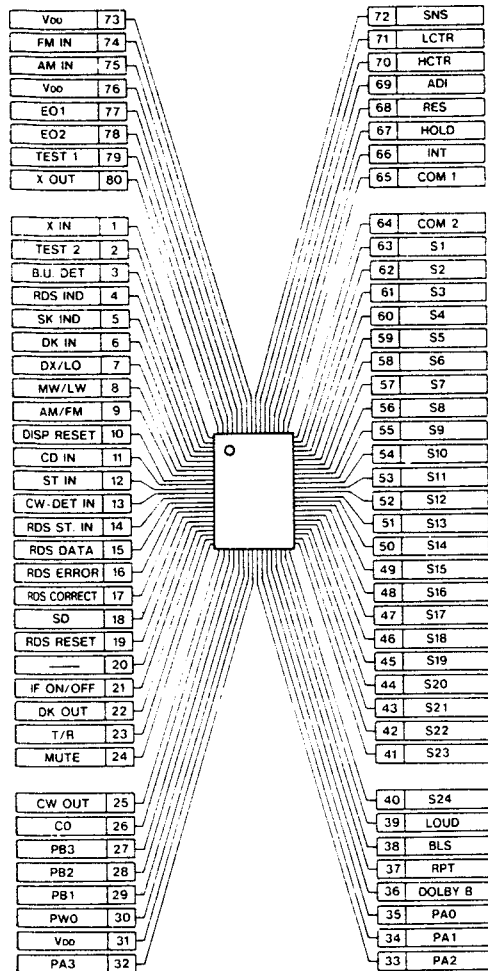
I. Outward Form



II. Maximum Ratings (Ta=25°C)

Item	Symbol	Condition	Rating	Unit
Supply voltage	V _{DD}	—	–0.3–6.5	V
Input voltage	V _{IN} (1)	Pin 3–6, 66, 68, 72 terminals	–0.3–6.5	V
	V _{IN} (2)	Pin 67 terminal	–0.3–1.3	V
	V _{IN} (3)	Input other than V _{IN} (1)	–0.3–V _{DD} +0.3	V
Output voltage	V _{OUT} (1)	Pin 7–10 terminals	–0.3–1.5	V
	V _{OUT} (2)	Output other than V _{OUT} (1)	–0.3–V _{DD} +0.3	V
Power dissipation	P _d	–40°C–+85°C	400	mW

III. Terminal Connection



IV. Terminal Connection Table

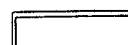
Pin No	Symbol	Function	I/O
1 80	X IN X OUT	Terminal for connecting an crystal resonator (4.5MHz)	I/O
2 79	TEST 2 TEST 1	LSI test pin to be connected to the open or the ground.	-
3	BACK UP DET	When this pin is "L", the microcomputer goes into the BACK UP mode	I
4			
5	SK IND	SK indicator driving input pin Active Low	
6	DK IN	DK discriminating signal input pin Active Low	O
7	DX/LO	DX/Local automatic changeover output pin DX High LO Low	
8	MW/LW	MW/LW band changeover output pin MW Low LW High	
9	AM/FM	MW/UKW band changeover output pin AM Low FM High	I
10	DISP RESET	Display reset output pin Active Low	
11			
12	ST IN	Stereo signal input terminal Active Low	I/O
13			
14			
15			O
16			
17			
22	DK OUT	DK output terminal Active Low	O

Pin No	Symbol	Function	I/O
23	T/R	Audio source output pin in TAPE/RADIO mode. TAPE mode High RADIO mode Low	O
24	MUTE	Muting signal output Active Low	
25			
26 27 28 29 30	PC0 PB3 PB2 PB1 PB0	Key return signal terminals for key matrix	O
31 73	V _{cc}	Power supply terminal of the device	-
32 33 34 35	PA3 PA2 PA1 PA0	Key matrix signal input terminal Attach pull-down resistance	I
36	DOLBY B	Dolby control signal output pin For DOLBY ON, Active-high for 50mS For DOLBY ON, Active-high	O
37	MTL	MTL control signal pin in TAPE mode For MTL ON, Active-high	
38	APC	APC control signal pin in TAPE mode For APC ON, Active-high	
39	LOUD	LOUD control signal pin in TAPE mode For LOUD ON, Active-high	O
40 41 63	S24 S1 S1	Segment signal terminals for LCD panel	
64 65	COM1 COM2	Common signal output terminals for LCD panel	O
66			I
67	HOLD	Input pin for setting the HOLD mode	I
68	RES	Reset signal input terminal	I
69	ADI	A/D converter input pin	I
70	HCTR	Universal counter input terminal For FM IF counter	I
71	LCTR	Universal counter input terminal For AM IF counter	I
72	SNS	Input pin for deciding if a power failure occurs in the BACK UP mode	I
74	FM IN	FM Local oscillation signal input	I
75	AM IN	AM Local oscillation signal input	I
76	GND	Ground	-
77 78	EO1 EO2	The charge pump outputs of the phase detectors which consist of PLL. Unlock time allows the output of errors. EO1 & EO2 allow the outputs in the same waveform and therefore either of them can be used	O

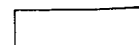
V. Key Matrix

§ 1. Key Matrix Connection Table

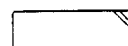
Key Out	Key In	PA0 (Pin 35)	PA1 (Pin 34)	PA2 (Pin 33)	PA3 (Pin 32)
PC0 (Pin 26)	MECH M-COM ENABLE DISABLE			R/T	
PB0 (Pin 30)	M1	M2	M3	M4	APC
PB1 (Pin 29)	TUNE UP	BAND	M5/MTL	M6	DOLBY B
PB2 (Pin 28)	TUNE DOWN	T MODE	PS	LOUD	
PB3 (Pin 27)		VF	AS		



Diode SW



Momentary SW



Transistor SW

§ 2. Diode SW

In the Table below, "0" means the diode switch is OFF (Open) and "1" does the diode switch is ON (Short)

Switch name	Function
MECH MI.COM ENABLE/DISABLE	Mechanical microcomputer enable/disable switch OFF Mechanical microcomputer enable mode ON Mechanical microcomputer disable mode

§ 3. Transistor SW

Switch name	Function
R/T SEL	TAPE-RADIO changeover signal switch OFF TAPE mode This switch serves as the M4 to M6 keys and the TAPE key Note In the mechanical microcomputer disable mode, the switch provides the traveling display (◀▶), APC, MTL, and □□ displays ON RADIO mode This switch serves as the M4 to M6 keys and the RADIO key
TAPE FOW/REV	Tape FOW/REV display changeover switch OFF ▶ display ON ◀ display

§ 4. Momentary SW

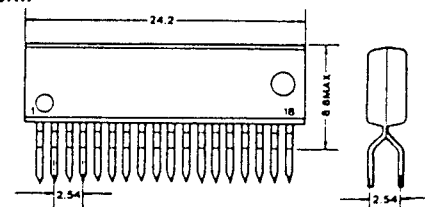
Switch name	Function
M1 M6 APC/MTL □□ B	○ RADIO mode Preset memory writing/calling keys One button allows the independent writing into memory in each band of FM, FM AS, and MW/LW (Writing into memory) Continuous press of the "M1" to "M6" keys for 2 sec. or more allows the writing into M1 to M6. Muting applied during 2 sec. press is released after completion of writing. (Calling memory) Pressing the key within 2 sec. allows the memory calling. Muting applied is released after completion of calling. (No muting is applied if the memory calling is carried out in the same frequency.) The LCD channel (CH) indicator is lit up when the "M1" to "M6" keys are pressed, displaying the receive frequency equivalent to the frequency when the key is released. ○ TAPE mode ① Cassette mechanical microcomputer enable mode When each function is turned ON, each port generates the High output for 50ms M4 M5 M6/ □□ B (Dolby-B) ② Cassette mechanical microcomputer disable mode When each function is turned ON, each port inverses the output. M4/APC M5/MTL M6/ □□ B (Dolby-B)
TUNE UP TUNE DOWN	○ MANUAL tuning UP/DOWN ① When the MANUAL mode is set by operating the "T-MODE" key, tuning can be operated by using the "UP" or "DOWN" key. ② Short press of the key within 0.5 sec. provides 1 step UP or DOWN. ③ Continuous press of the key for 0.5 sec. or more provides the continuous feeding, and release of the key stops the feeding. ○ SEEK tuning UP/DOWN ① In the SEEK mode, tuning can be operated by using the "UP" or "DOWN" key. Usually, the SEEK mode is set (the SEEK mode is returned from the MANUAL mode for 5 sec. or by operating the "T-MODE" key). ② The SEEK tuning starts, detecting the SD signal, S meter signal, and IF counter. When the signal is judged to be detected in the station, the SEEK tuning stops, setting the last channel data to the same level as the receiving station. The SEEK tuning stops after three rounds in order of LO, DX, and DX mode.
BAND	Receiving band changeover key. The receiving band change each time this key is pressed. UKW → MW/LW
T-MODE	SEEK/MANUAL tuning changeover key. The SEEK mode is usually selected. Upon press of this key, the MANUAL mode for the TUNE UP/DOWN key is selected for 5 sec. in the MANUAL tuning mode.

Switch name	Function
PS	① The content of preset memory is called in serial order every 5 sec. ② When the "PSS" key is pressed, the station is received in serial order every 5 sec. from the preset memory one larger number than the current preset memory. After receiving the station from M6, the station is received returning to M1. When the channel number is not displayed, the station is received starting from M1. ③ When the preset station is being called, the station in which the SD signal is not detected is skipped. ④ During scanning of the memory, the channel number of the preset station being held is made flashing. ⑤ If the "PSS" is pressed again during hold, the station in which the last SD signal is detected is called, causing the operation to stop.
LOUD	LOUD ON/OFF select SW
VF	(1) VF key will become valid only when receiving UKW. With the key turned on a display is made by the LCD only in case of the UKW mode. VF is held ON also when the UKW mode is set again by changing reception bands after turning VF on in the UKW mode. With VF turned on, auto tuning stops when SD=IF count=SK=1. It does not stop by pressing this key during auto tuning. (2) VF auto retuning is performed (SEEK UP) under the following condition. In the VF ON mode, SK-SD is sampled every 2 seconds (checks 200 times every 10ms, and judges as the Low level when SK-SD=0 in 101 check times or more). If the Low level continues 12 times (24 seconds), auto tuning will start. When SK-SD sampling is at the High level, a Low level count so far is cleared and a new Low level count starts from the next one. (3) a) In the UKW mode, if SK-SD=0 when shifting VF from OFF to ON, retuning will be done without counting. Counting will start without retuning, if SK-SD=1. b) In the UKW mode, if you return to UKW-VF ON mode by calling a preset channel or M UP/DOWN or by changing bands, PLL lock will be detected. After 500ms, if SK-SD=0, VF retuning will be performed without counting, and if SK-SD=1, counting will start without retuning.
AS	a FM Within 2 sec. Changeover from FM band to FM AS band or auto store stop. More than 2 sec. Auto store into FM AS band. b AM Within 2 sec. Irrelevant. More than 2 sec. Auto store into AM band. (AS operation) 1. When the "AS" key is kept ON for 2 sec. or more, the auto search starts after 2 sec. When the station is caught, it is stored in serial order into the preset memories M1 to M6. At the start of auto search, the search is carried out in the frequency one step larger than the receive frequency. a FM The station caught through search is stored into the rear side of preset memories M1 to M6. b AM The station caught through search is stored into the preset memories M1 to M6. 2. During execution of AS, (AS) and CH-NO of the channel next to be stored are made flashing. 3. The station in the same frequency is not stored through one-time auto store.

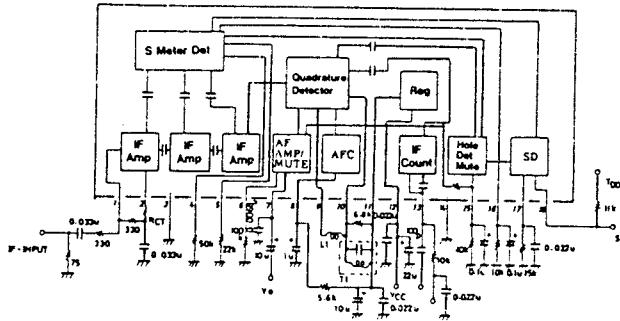
■ LA1145 051-1146-00 FM IF System (Quadrature Detector)
051-1146-01

* The part of electric specification is different between 051-1146-00 and 051-1146-01. (Output level for signal meter output)

Outward Form



Block Diagram

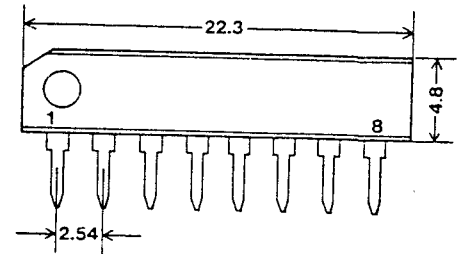


Terminal Connection

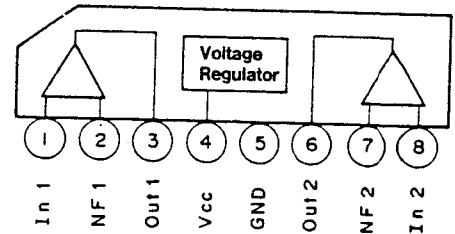
NO.	Function
1	IF Input
2	IF Amp Bias
3	IF Amp GND
4	Mute start Control
5	Mute Tilt Control
6	Mute Att Control
7	AF Output
8	AFC Output
9	IF Output
10	Quadrature Detect In
11	Voltage regulator Out
12	Vcc
13	IF Count out, Control
14	Detector GND
15	Mute Act
16	S Meter Output
17	SD Sens Control
18	SD Output

■M6901L 051-0301-03 Dual Pre Amp

Outward Form



Block Diagram



■PARTS LIST:

◎Electrical section

REF.NO.	PART NO.	DESCRIPTION	Q'TY
101~111 113,201,302 303,305,306 D307,309 402~413 502,505,510 514,515	001-0330-00	Diode 1SS119	36
	(001-0294-00)	Diode (1SS133)	
	(001-0352-00)	Diode (1SS176)	
D508	001-0334-00	Diode DSA17B	1
D511	001-0361-00	Diode 1SS198	1
D308	001-0366-00	Diode LTZ-MR15	1
D310,504	001-0377-35	Diode MA4062M	2
	(001-0376-36)	Diode (MTZ6.2JC)	
	(001-0400-35)	Diode (HZS6.2JB2)	
D503	001-0377-36	Diode MA4062H	1
	(001-0376-37)	Diode (MTZ6.8JA)	
	(001-0400-36)	Diode (HZS6.2JB3)	
D301,401,901	001-0377-47	Diode MA4091M	3
	(001-0376-48)	Diode (MTZ9.1JC)	
	(001-0400-47)	Diode (HZS9.1JB2)	
D509	001-0423-23	Diode MA4082	1
D501,506	001-0466-00	Diode S5688B	2
	(001-0499-00)	Diode (ERA15-01)	
	(001-0534-00)	Diode (1SR139)	
D512,513	001-0502-00	Diode 1FWJ43	2
IFT101	005-0865-01	IF-transformer MS2	1

REF.NO.	PART NO.	DESCRIPTION	Q'TY
IFT102	005-1001-00	IF-transformer DET	1
L 501	009-0633-04	Choke ACC	1
L 101	010-2046-12	Coil	1
L 102	010-2046-44	Coil	1
L 103	010-2047-67	Coil 5.6μH	1
L 502,503	010-2165-01	Coil ILL	2
VR308	012-3808-06	Variable resistor 10kΩ	1
VR102,201 202	012-3808-07	Variable resistor 22kΩ	3
VR103	012-3808-10	Variable resistor 100kΩ	1
VR101	012-3808-13	Variable resistor 470kΩ	1
CCT1	050-0077-63	Component circuit 33kΩx4	1
IC303	051-0267-00	IC TC4066BP	1
	(051-0267-30)	IC (MC14066BCP)	
IC201	051-0301-03	IC M6901L	1
IC202	051-0561-01	IC AN6263N	1
IC302	051-0606-00	IC BT3S501	1
IC350	051-0619-01	IC LB0354	1
IC302	051-0958-01	IC TA8205AH	1
IC301	051-1038-00	IC CXA1102P	1
IC401	051-1141-02	IC LC7230-8236	1
IC402	051-1143-00	IC	1

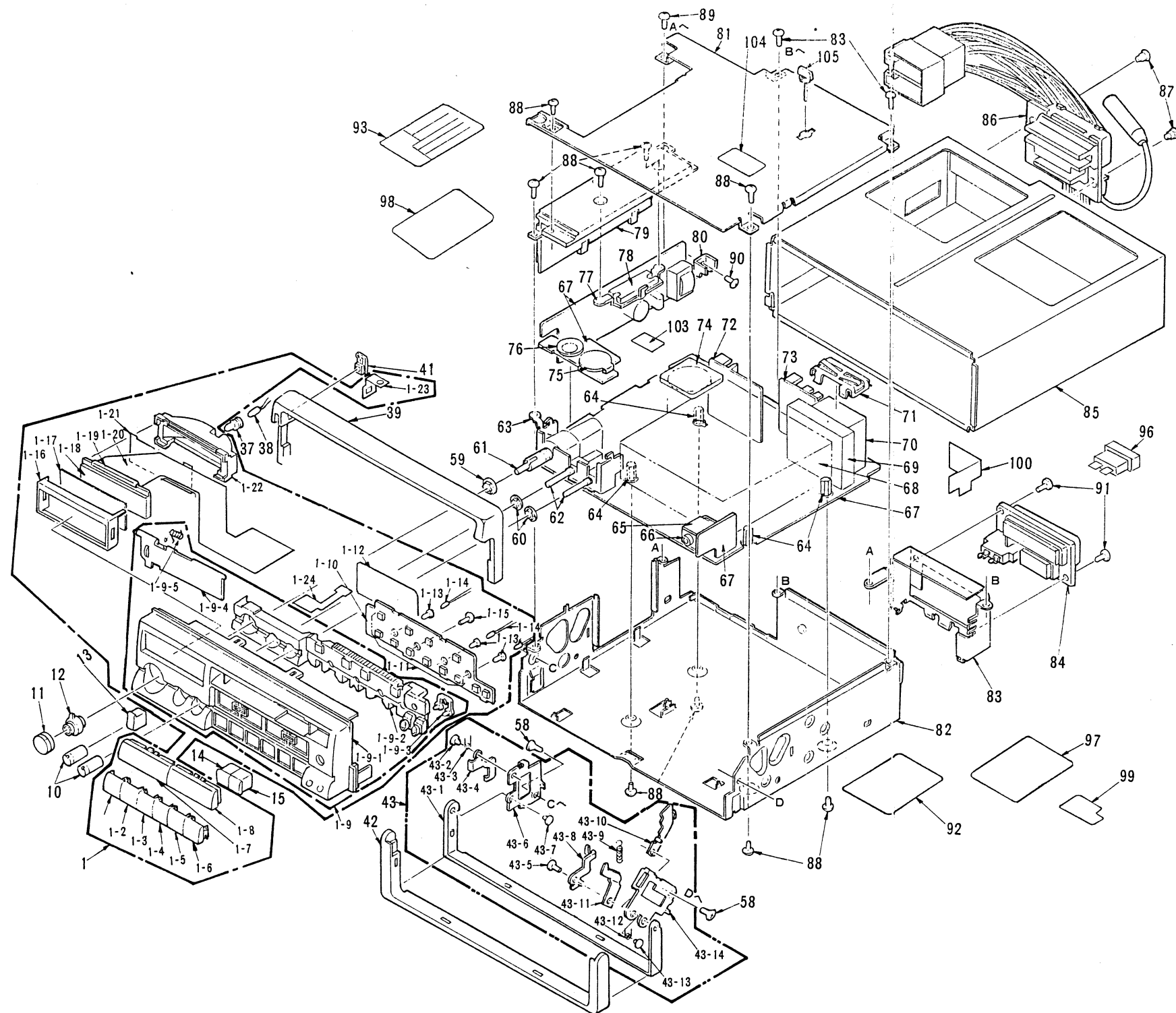
REF.NO.	PART NO.	DESCRIPTION	Q'TY	REF.NO.	PART NO.	DESCRIPTION	Q'TY
IC101	051-1146-00	IC LA1145	1	C102	171-4722-06	Ceramic capacitor 0.0047 μ F SC	1
IC501	051-1148-00	IC S-8053ALR	1	C213,410,503	171-4732-06	Ceramic capacitor 0.047 μ F SC	3
	060-0054-00	Jumper wire	1	C119,120	171-5622-06 171-3922-06	Ceramic capacitor 0.0056 μ F 0.0039 μ F	2
F 501	060-0057-56	Auto fuse 10A	1	C122	171-6832-06	Ceramic capacitor 0.068 μ F SC	1
	060-0108-00	Jumper wire	1	C201,202	173-1022-10	Polyester capacitor 0.001 μ F S	2
SUP101	060-0122-10	Surge protector	1	C507	173-1042-10	Polyester capacitor 0.1 μ F S	1
X401	061-1053-00	Crystal 4.5MHz	1	C214,215	173-1532-10	Polyester capacitor 0.015 μ F S	2
BATT.	088-0017-01	Battery	1	C322 C333~335	173-2242-10	Polyester capacitor 0.22 μ F S	4
Q105	100-1048-00	Transistor 2SA10480,Y,GR	1	C207,208	173-3332-10	Polyester capacitor 0.033 μ F S	2
Q102,405,406 Q408,502	100-1346-00	Transistor 2SA1346-AC	5	C403,404	174-2200-13	Ceramic capacitor 22pF CH TC	2
Q108,109	101-0811-00	Transistor 2SB811-T	2	C317,331	179-2273-22	Electrolytic capacitor 10V220 μ F S	2
Q202	101-1243-50	Transistor 2SB1243	1	C124	179-4763-22	Electrolytic capacitor 10V47 μ F S	1
Q505	102-1846-00	Transistor 2SC1846Q,R,S	1	C218,303,405	182-1073-22	Electrolytic capacitor 10V100 μ F SS	3
Q103,111,201 Q203~205 Q306~310 Q404,407,501	102-2458-00	Transistor 2SC24580,Y,GR,BL	14	C312,512	182-1073-32	Electrolytic capacitor 16V100 μ F SS	2
Q101,401,402	102-2458-51	Transistor 2SC2458GR,BL	3	C325,326	182-2256-52	Electrolytic capacitor 35V2.2 μ F SS	2
Q104,107,305 Q403	102-3400-00	Transistor 2SC3400	4	C508	182-4763-32	Electrolytic capacitor 16V47 μ F SS	1
Q106,110	102-3402-00	Transistor 2SC3402	2	C114	183-1043-62	Electrolytic capacitor 50V0.1 μ F USS	1
Q503	102-3420-00	Transistor 2SC3420	1	108,109,123 C203,204,210 C211,315,316 C320,323	183-1053-62	Electrolytic capacitor 50V1 μ F USS	11
Q301~303	103-1450-00	Transistor 2SD1450R,S,T	3	107,116,216 C220,301,302 C306,309,310 C311,313,314 C321,322,339 C340,301,402	183-1063-32	Electrolytic capacitor 16V10 μ F USS	18
Q304,504	103-1858-00	Transistor 2SD1858P,Q,R	2				
R590	032-0084-00	Fuse resistor	1	C205,206,304	183-1073-12	Electrolytic capacitor 6.3V100 μ F USS	3
R512	111-4701-81	Film resistor 1/2W47 Ω	1	C324	183-2263-12	Electrolytic capacitor 6.3V22 μ F USS	1
R510	114-1001-11	Film resistor 1W10 Ω OM	1	C127,329,330	183-2263-32	Electrolytic capacitor 16V22 μ F USS	3
C509	042-0412-01	Double layer capacitor 5.5V1 μ F	1	C408	183-3343-62	Electrolytic capacitor 50V0.33 μ F USS	1
C336	042-0428-00	Alumi electrolytic capacitor 16V2200 μ F	1	C409	183-3353-62	Electrolytic capacitor 50V3.3 μ F USS	1
C337	043-0251-00	Plastic film capacitor 0.1 μ F	1	C318	183-3363-22	Electrolytic capacitor 10V33 μ F USS	1
C106,412,413 C514	160-1022-05	Ceramic capacitor 1000pF B HD	4	C126	183-4743-62	Electrolytic capacitor 50V0.47 μ F USS	1
C327,328	160-1222-05	Ceramic capacitor 1200pF B HD	2	C209,217,307 C338,341	183-4753-52	Electrolytic capacitor 35V4.7 μ F USS	5
C113	160-3312-05	Ceramic capacitor 330pF B HD	1	C319,501,504	183-4763-12	Electrolytic capacitor 6.3V47 μ F USS	3
C115	160-5612-05	Ceramic capacitor 560pF B HD	1	C125,342,505 C506,510	183-4763-32	Electrolytic capacitor 16V47 μ F USS	5
C406,411 C511,513	171-1032-06	Ceramic capacitor 0.01 μ F SC	4	C307,308	183-6843-62	Electrolytic capacitor 50V0.68 μ F USS	2
C103,105,110 C111,112,155 C212	171-2232-06	Ceramic capacitor 0.022 μ F SC	6	C117,118	171-1232-06	Ceramic capacitor 0.012 μ F	2
C121	171-3322-06	Ceramic capacitor 0.0033 μ F SC	1				
C104,150,407	171-3332-06	Ceramic capacitor 0.033 μ F SC	3				

NOTE : OM (Oxidized Metal) SS (Super Small)
S (Small) TC (Temperature-Compensating)
HD (Higher Dielectric) LL (Low Leak)
SC (Semi-Conductor) USS (Ultra Super Small)

EXPLODED VIEW • PARTS LIST:

◎Main section

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REF.NO.	PART NO.	DESCRIPTION	Q'TY	
1	940-1138A	Escutcheon ass'y (PE-9411A-A)	1	1-7	382-2174-00	Button (T.MODE, BAND)	1	
	940-1139A	Escutcheon ass'y (PE-9412A-A)		1-8	382-2175-00	Button (TUN)	1	
	940-1140A	Escutcheon ass'y (PE-9413A-A)		1-9	940-3068-00	Escutcheon ass'y (PE-9411A-A)	1	
	940-1141A	Escutcheon ass'y (PE-9414A-A)			940-3069-00	Escutcheon ass'y (PE-9412A-A)		
1-1	382-2169-00	Button (1)	940-3070-00		Escutcheon ass'y (PE-9413A-A)			
1-2	382-2169-01	Button (2)	940-3071-00		Escutcheon ass'y (PE-9414A-A)			
1-3	382-2169-02	Button (3)	1	1-9-1	370-5192-04	Escutcheon (PE-9411A-A)	1	
1-4	382-2169-03	Button (4/APC) (PE-9411A-A, PE-9412A-A)	1		370-5192-05	Escutcheon (PE-9412A-A)		
	382-2169-06	Button (4) (PE-9413A-A, PE-9414A-A)			370-5192-06	Escutcheon (PE-9413A-A)		
1-5	382-2169-04	Button (5/MTL) (PE-9411A-A, PE-9412A-A)	1		370-5192-07			Escutcheon (PE-9414A-A)
	382-2169-07	Button (5) (PE-9413A-A, PE-9414A-A)		1-9-2	335-3314-00	Illumi. plate	1	
1-6	382-2169-05	Button (6/□□)	1	1-9-3	382-2173-00	Button	1	



REF.NO.	PART NO.	DESCRIPTION	Q'TY
1-9-4	320-0431-18	Dustproof cover (PE-9411A-A, PE-9413A-A)	1
	320-0431-19	Dustproof cover (PE-9412A-A, PE-9414A-A)	
1-9-5	750-2626-00	Spring	1
1-10	099-8937-01	SW P.W.B	1
1-11	013-3694-10	Switch	12
1-12	347-3131-02	Protector	1
1-13	345-3436-26	Lamp cap	3
1-14	017-0345-09	Pilot lamp	3
1-15	716-0778-00	Wave screw	1
1-16	330-9327-00	LCD cover	1
1-17	373-0593-00	Dial cover	1
1-18	379-0289-00	Indicator	1

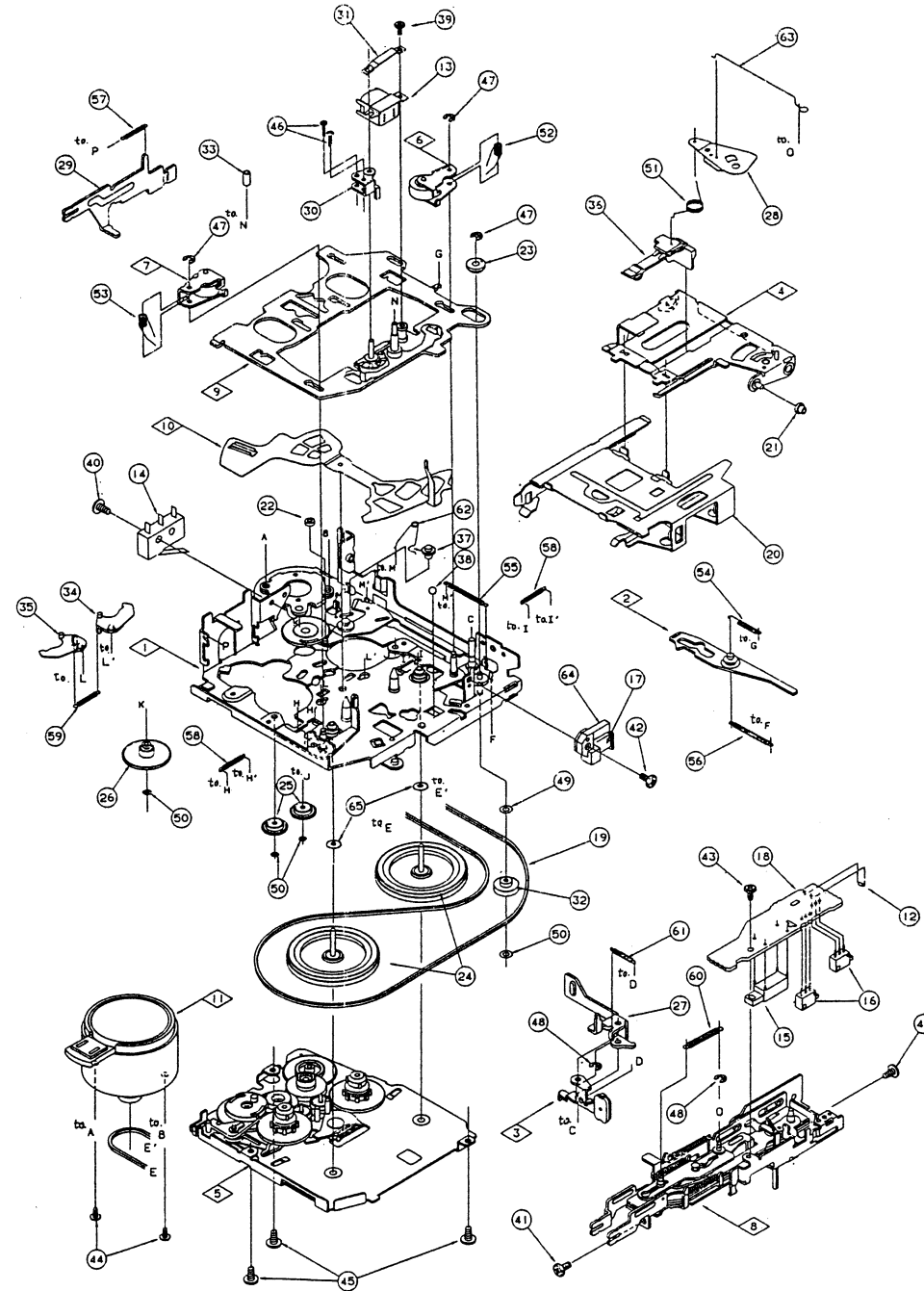
REF.NO.	PART NO.	DESCRIPTION	Q'TY
1-19	321-0961-00	Clamp	1
1-20	816-2096-00	FPC	1
1-21	347-3133-00	Reflector	1
1-22	335-3319-00	LCD holder	1
1-23	347-3132-00	Conductor	1
1-24	099-8938-01	Flex. P.W.B	1
10	380-5125-00	Knob (B/T)	2
11	380-5127-00	Knob (Vol)	1
12	380-5126-00	Knob (FAL)	1
13	382-2172-00	Button (PRO)	1
14	382-2171-00	Button (REW)	1
15	382-2170-00	Button (FF)	1

REF.NO.	PART NO.	DESCRIPTION	Q'TY
37	345-3667-11	Lamp cap	1
38	017-0346-13	Pilot lamp	1
39	370-5193-00	Escutcheon	1
41	382-2199-00	Button	1
42	335-3315-00	Handle cover	1
43	946-0035-00	Handle ass'y	1
43-1	330-9334-00	Handle	1
43-2	399-4139-00	Stopper	1
43-3	750-2834-01	Spring	1
43-4	330-9331-00	Hook plate	1
43-5	399-4138-00	Stopper	1
43-6	330-9324-00	Side plate	1

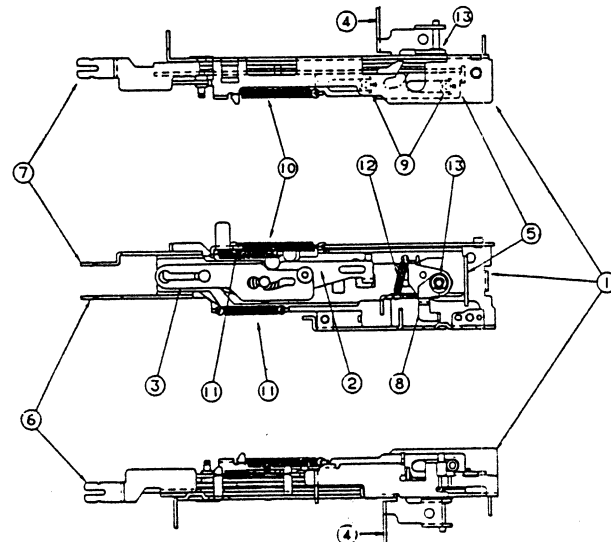
REF.NO.	PART NO.	DESCRIPTION	Q'TY
43-7	399-4140-00	Stopper	1
43-8	330-9335-00	Slide plate	1
43-9	750-2832-01	Spring	1
43-10	330-9330-00	Hook plate	1
43-11	330-9328-00	Slide plate	1
43-12	750-2833-00	Spring	1
43-13	399-4173-00	Stopper	1
43-14	330-9332-00	Slide plate	1
58	731-3008-49	Tap tight (M3x8)	2
59	722-0370-00	Nut	1
60	722-0433-00	Nut	2
61	012-4933-00	Variable resistor	1
62	012-4934-00	Variable resistor	2
63	330-9326-00	Volume holder	1
64	716-0877-00	Spacer	4
65	330-9325-00	Jack holder	1
66	075-0301-00	Jack	1
67	099-8936-01	P.W.B	1
68	930-0578-86	Tape mechanism (PE-9411A-A, PE-9412A-A)	1
	930-0572-86	Tape mechanism (PE-9413A-A, PE-9414A-A)	
69	941-0177-01	AM Tuner pack	1
70	880-1419A	FM Tuner pack	1
71	330-9329-00	Earth plate	1
72	880-0201B	SDK block ass'y (PE-9411A-A, PE-9413A-A)	1
73	880-0304B	NC MPX block ass'y	1
74	313-1416-00	Motor heat sink	1
75	088-0017-01	Battery	1
76	042-0412-01	Gold capacitor	1
77	330-8976-01	IC holder	1
78	051-0958-01	IC	1
79	313-1398-05	Heat sink	1
80	313-1278-00	Heat sink	1
81	303-0382-00	Upper cover	1
82	311-1432-03	Lower case	1
83	330-9333-00	Connector holder	1
84	854-1603-00	Extension lead	1
85	300-7645-00	Mounting bracket	1
86	854-1602-00	Extension lead	1
87	716-1454-00	Connector screw	1
88	716-0878-00	Screw	1
89	714-2610-81	Machine screw (M2.6x10)	1
90	714-3005-81	Machine screw (M3x5)	1
91	731-3006-80	Tap tight (M3x6)	2
92	286-7361-00	Set plate (PE-9411A-A)	1
	286-7362-00	Set plate (PE-9412A-A)	
	286-7363-00	Set plate (PE-9413A-A)	
	286-7364-00	Set plate (PE-9414A-A)	
93	286-7365-01	ID card label (PE-9411A-A)	1
	286-7366-01	ID card label (PE-9413A-A)	
96	060-0057-56	Auto fuse (10A)	1
97	285-1410-00	Guide label (Service record)	1
98	285-1411-00	Guide label (Cortion)	1
99	347-2342-00	Sheet	1
100	347-3189-02	Insulator (PE-9411A-A, PE-9413A-A)	1
103	347-3032-00	Insulator (PE-9412A-A, PE-9414A-A)	1
104	285-1199-00	Guide label (PE-9413A-A, PE-9414A-A)	1
105	335-1360-00	Lock pin (PE-9413A-A, PE-9414A-A)	1

■EXPLODED VIEW · PARTS LIST: PE-9411A-A, PE-9412A-A

©Tape mechanism section 930-0578-86

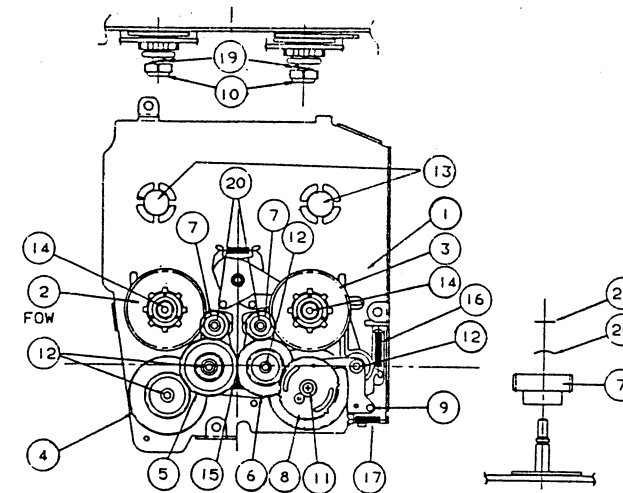


<960-3862-10 Frame sub-A-RMS>



REF.NO.	PART NO.	DESCRIPTION	Q'TY
1	960-3841-04	Frame ass'y RMS	1
2	960-3887-03	Select P-ass'y S	1
3	960-3845-03	Click P-ass'y	1
4	630-1931-02	Lock arm	1
5	630-1938-03	Eject plate RS	1
6	630-1942-06	FF lever RM	1
7	630-1947-06	REW lever RM	1
8	960-4058-00	SW plate ass'y	1
9	610-0296-01	Eject-P-roller	2
10	750-2549-01	Eject spring R	1
11	750-2550-02	FF spring RM	2
12	750-2556-01	SW plate spring	1
13	743-1500-20	E-ring	1

<960-3956-02 Bottom sub ass'y>



Ref. No.	Part No. (Order No.)	Description	Q'ty
19	750-2564-01	Slide spring	2
20	745-0678-02	Washer	2
21	746-0797-00	Washer	2

Ref. No.	Part No. (Order No.)	Description	Q'ty
1	960-3955-02	Bottom ass'y E	1
2	960-3854-03	Reel ass'y F	1
3	960-3855-05	Reel ass'y R	1
4	613-0088-01	Gear B	1
5	613-0089-02	Gear F	1
6	613-0090-02	Gear R	1
7	613-0091-01	Play idler gear	2
8	613-0093-03	Change gear	1
9	631-0546-02	Lock link	1
10	631-0554-00	Slide bush	2
11	716-0716-10	Screw	1
12	746-0761-00	Washer	6
13	746-0767-00	Washer	2
14	746-0768-00	Washer	2
15	750-2542-00	Idler-P-spring	1
16	750-2543-01	Sensing spring	1
17	750-2544-03	Lock-L-spring	1
18	750-2546-01	Cancel spring	1

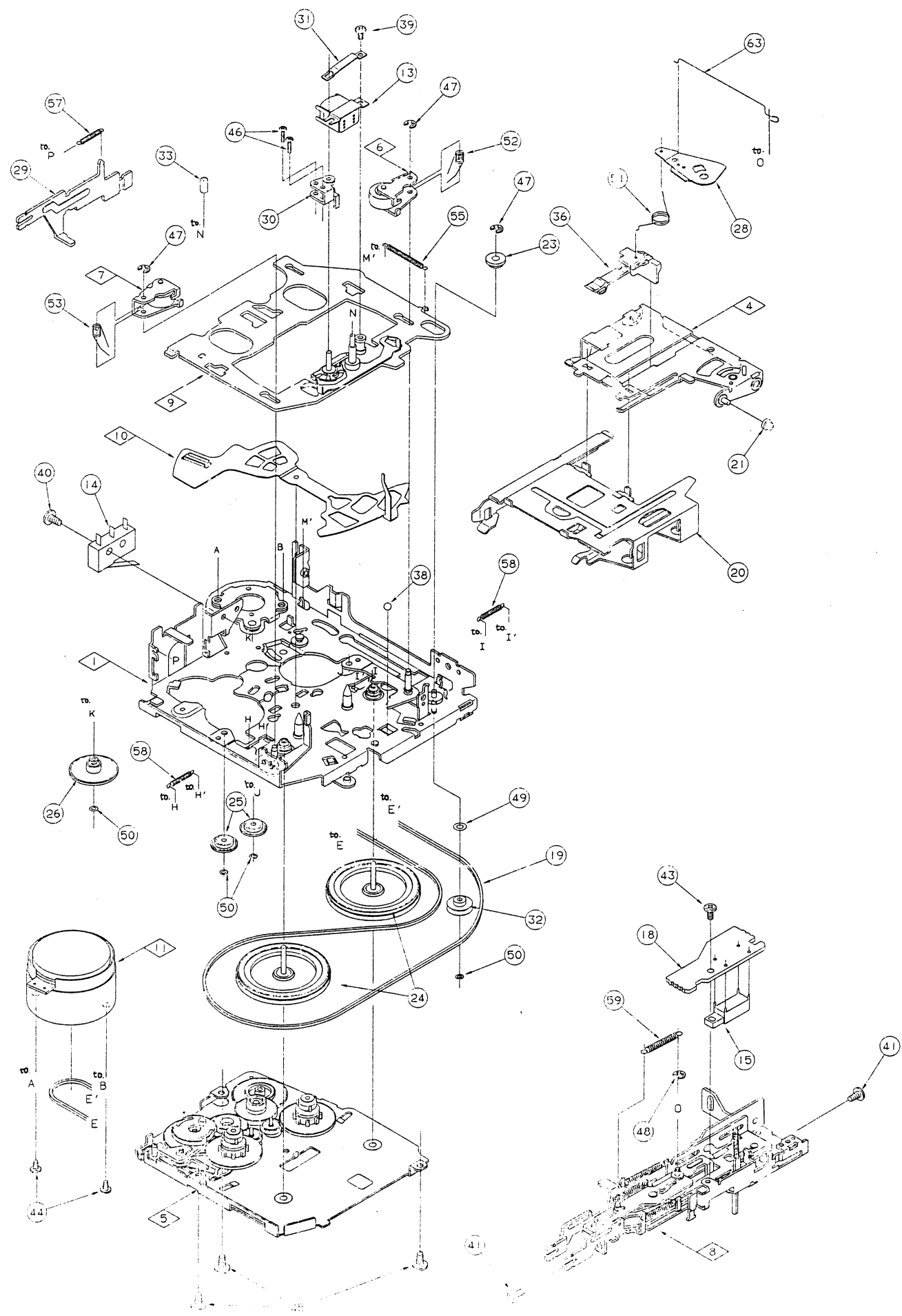
■PARTS LIST: ©Tape mechanism section

Ref. No.	Part No. (Order No.)	Description	Q'ty
1	960-3834-03	Deck-P ass'y R	1
2	960-3837-04	Shift-P ass'y	1
3	960-3839-03	Plunger-L ass'y	1
4	960-3840-02	Guide arm ass'y	1
5	960-3956-02	Bottom sub-A-E	1
6	960-3852-03	Roller ass'y F	1
7	960-3853-03	Roller ass'y R	1
8	960-3862-10	Frame sub-A-RMS	1
9	960-3867-07	Head-P-ass'y RMD	1
10	960-3881-04	CH plate ass'y	1
11	SMA-121-100	Motor ass'y	1
12	001-0330-00	Diode	1
13	011-0310-01	Head	1
14	013-2690-02	Switch	1
15	013-3807-00	Switch	1
16	013-3808-11	Switch	2
17	960-3392-01	Coil ass'y	1
18	099-7851-01	PWB	1
19	602-0103-10	Belt	1
20	606-0083-09	Pack guide	1
21	610-0226-01	Roller	1
22	610-0293-01	Power roller	1
23	610-0294-01	Head-P-G-roller	1
24	611-0077-01	Flywheel	2
25	613-0095-01	FF idler gear	2
26	613-0087-10	Gear A	1
27	630-1930-02	OFF arm	1
28	630-1932-02	Swing arm	1
29	630-2290-00	Program lever	1
30	630-1956-02	Adjust link	1
31	630-1962-02	Head spring	1
32	604-0035-01	Tension pulley	1
33	631-0545-01	Eject roller	1

Ref. No.	Part No. (Order No.)	Description	Q'ty
34	631-0550-02	Brake F	1
35	631-0551-02	Brake R	1
36	631-0552-03	Pack stopper	1
37	632-1886-02	Lock pin	1
38	632-1888-00	Ball	1
39	716-0816-00	Screw (M2x3)	1
40	714-2308-81	Machine screw (M2.3x8)	1
41	714-2604-81	Machine screw (M2.6x4)	2
42	714-2606-11	Machine screw (M2.6x6)	1
43	716-0790-00	Machine screw	1
44	716-0715-15	Screw	2
45	716-0717-10	Screw	3
46	716-0718-21	Screw	2
47	743-1500-20	E-ring	3
48	743-2000-20	E-ring	2
49	746-0624-00	Washer	3
50	746-0761-00	Washer	4
51	750-2361-01	Spring	1
52	750-2535-04	Roller spring F	1
53	750-2536-04	Roller spring R	1
54	750-2537-02	Over-P-spring	1
55	750-2538-01	Power-P-spring	1
56	750-2539-01	Shift-P-spring	1
57	750-2541-02	Program spring	1
58	750-2545-00	FF gear spring	2
59	750-2547-00	Brake spring	1
60	750-2554-03	Click-P-spring	1
61	750-2555-02	OFF arm spring	1
62	750-2568-00	Lock spring	1
63	750-2569-03	Eject rod RS	1
64	630-1479-02	Core	1
65	746-0814-00	Washer	2

■EXPLODED VIEW • PARTS LIST: PE-9413A-A, PE-9414A-A

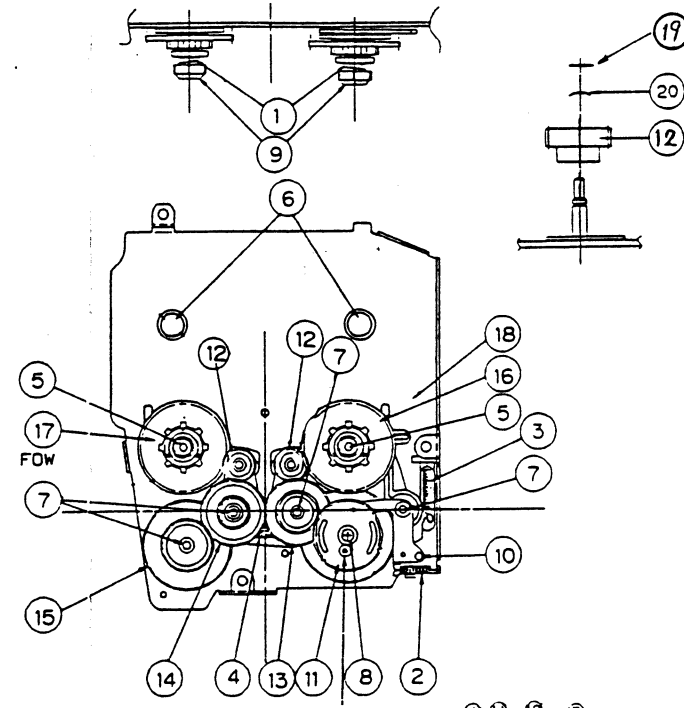
©Tape mechanism section 930-0572-86



REF. NO.	PART NO.	DESCRIPTION	Q'TY
1	960-3833-03	Deck P-ass'y C	1
4	960-3840-02	Guide arm-ass'y	1
5	960-3850-12	Bottom sub-A-C	1
6	960-3852-03	Roller-ass'y-F	1
7	960-3853-03	Roller-ass'y-R	1
8	960-3889-10	Frame sub-A-CS	1
9	960-3890-07	Head-P-ass'y CD	1
10	960-3881-04	CH plate-ass'y	1
11	SMA-121-100	Motor-ass'y	1
13	011-0310-01	Head	1
14	013-2690-02	Switch	1
15	013-3807-00	Switch	1
18	099-7852-01	P.W.B.	1
19	602-0103-10	Belt	1
20	606-0083-09	Pack guide	1
21	610-0226-01	Roller	1
23	610-0294-01	Head-P-G-roller	1
24	611-0077-01	Flywheel	2
25	613-0095-01	FF idler gear	2
26	613-0087-10	Gear A	1
28	630-1932-02	Swing arm	1
29	630-2290-00	Program lever	1
30	630-1956-02	Adjust link	1
31	632-1962-02	Head spring	1

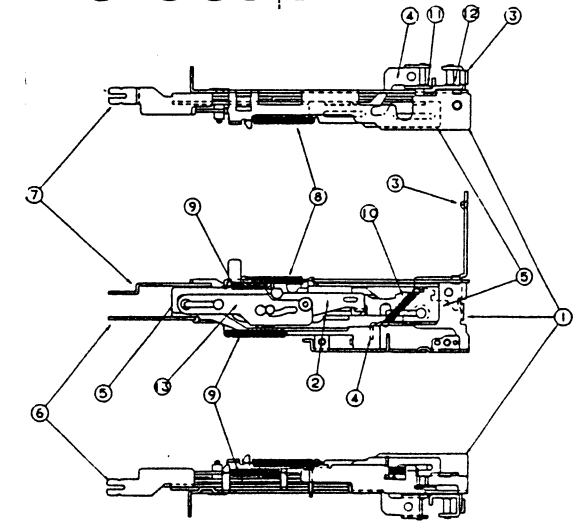
REF. NO.	PART NO.	DESCRIPTION	Q'TY
32	604-0035-01	Tension pulley	1
33	631-0545-01	Eject roller	1
36	631-0552-03	Pack stopper	1
38	632-1888-00	Ball	1
39	716-0816-00	Screw	1
40	714-2308-81	Machine screw (M2.3x8)	1
41	714-2604-81	Machine screw (M2.6x4)	2
43	716-0790-02	Machine screw	1
44	716-0715-15	Screw	2
45	716-0717-10	Screw	3
46	716-0718-21	Screw	2
47	743-1500-20	E-ring	3
48	743-2000-20	E-ring	1
49	746-0624-00	Washer	1
50	746-0761-00	Washer	4
51	750-2361-01	Spring	1
52	750-2535-04	Roller spring F	1
53	750-2536-04	Roller spring R	1
55	750-2560-02	Head-P-spring	1
57	750-2541-02	Program spring	1
58	750-2545-00	FF gear spring	2
59	750-2620-00	Click spring	1
63	750-2569-03	Eject rod RS	1

©BOTTOM SUB-A-C 960-3850-12



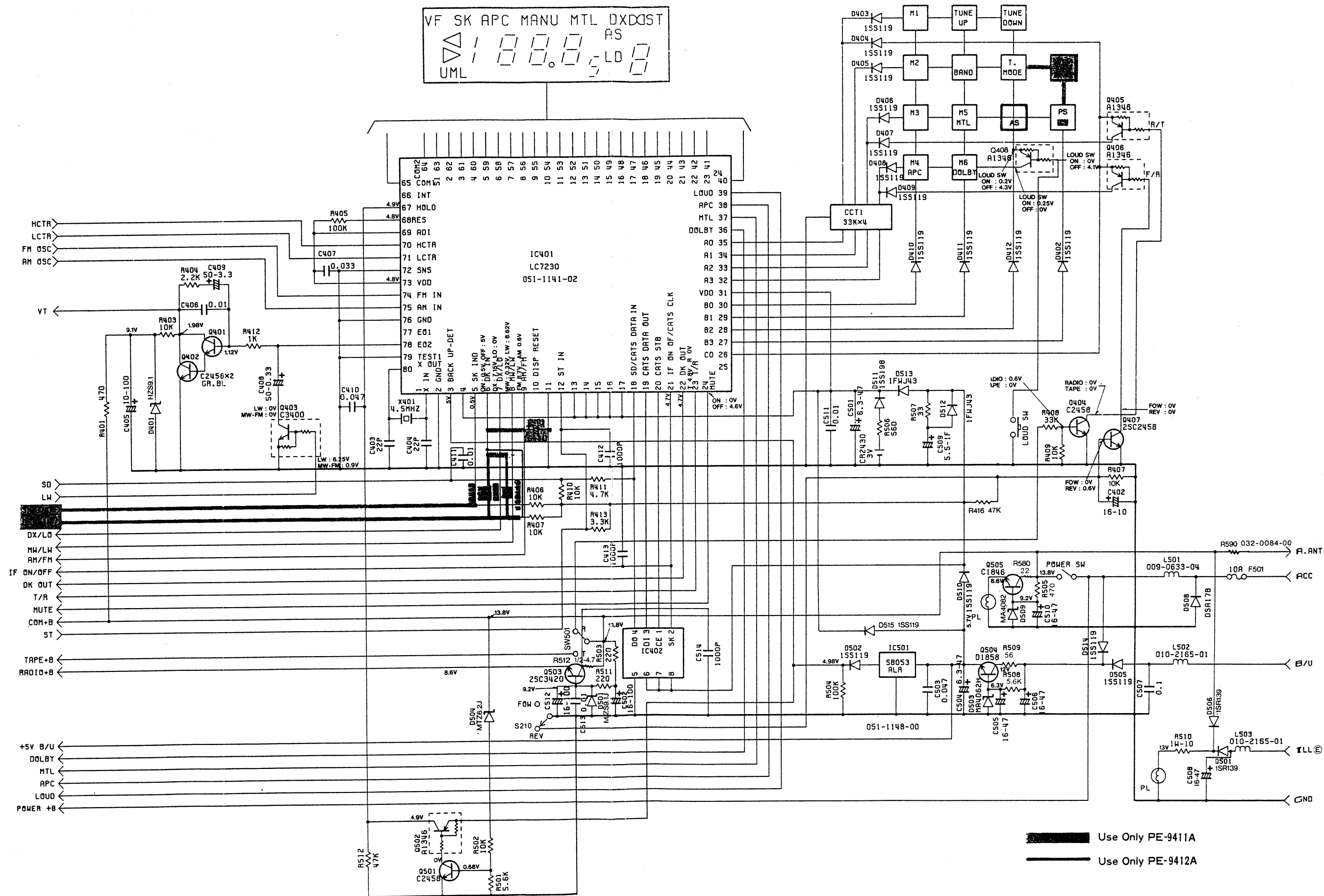
REF. NO.	PART NO.	DESCRIPTION	Q'TY
1	750-2564-01	Slide spring	2
2	750-2544-03	Lock-L-spring	1
3	370-2543-01	Sensing spring	1
4	750-2542-00	Idler-P-spring	1
5	746-0768-00	Washer	2
6	746-0767-00	Washer	2
7	746-0761-00	Washer	4
8	716-0716-10	Screw	1
9	631-0554-00	Slide bush	2
10	631-0546-01	Lock link	1
11	613-0093-02	CH gear	1
12	613-0091-01	Play idler gear	2
13	613-0090-02	Gear R	1
14	613-0089-01	Gear F	1
15	613-0088-01	Gear B	1
16	960-3855-05	Reel ass'y R	1
17	960-3854-03	Reel ass'y F	1
18	960-3846-06	Bottom ass'y C	1
19	746-0628-00	Washer	2
20	745-0678-01	Washer	2

©FRAME SUB-A-CS 960-3889-10



REF. NO.	PART NO.	DESCRIPTION	Q'TY
1	960-3882-02	Frame-ass'y-CS	1
2	960-3887-03	Select-P-ass'y-S	1
3	630-1930-02	Off arm	1
4	630-1931-02	Lock arm	1
5	630-1974-05	Eject plate CS	1
6	630-1945-04	FF lever C	1
7	630-1949-04	REW lever C	1
8	750-2548-01	Eject spring	1
9	750-2550-02	FF spring C	2
10	750-2557-02	Lock arm spring	1
11	743-1500-20	E-ring	1
12	743-2000-20	E-ring	1
13	960-3845-03	Click-P-ass'y	1

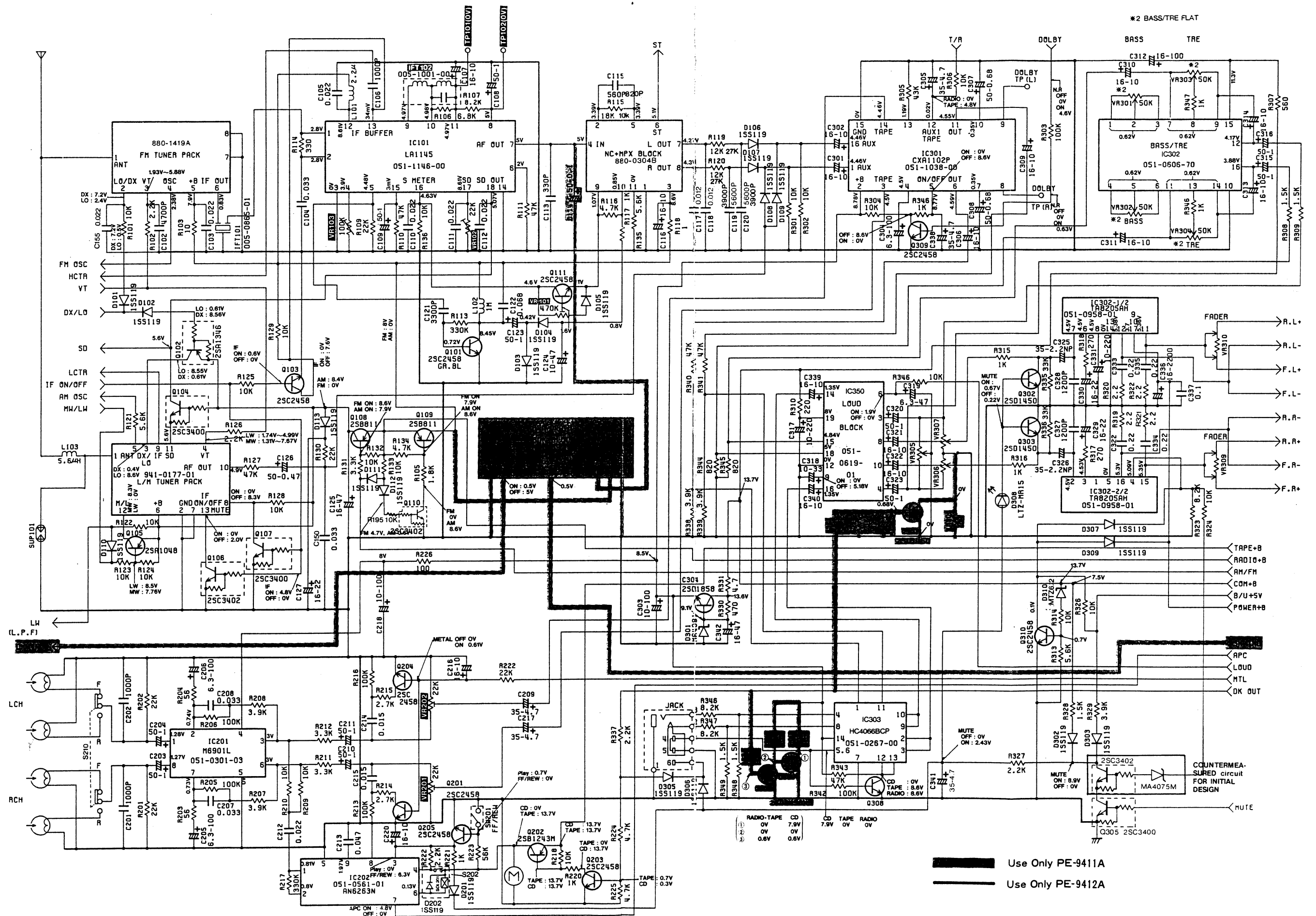
CIRCUIT DIAGRAM: 1/2
PE-9411A-A · PE-9412A-A



Use Only PE-9411A
 Use Only PE-9412A

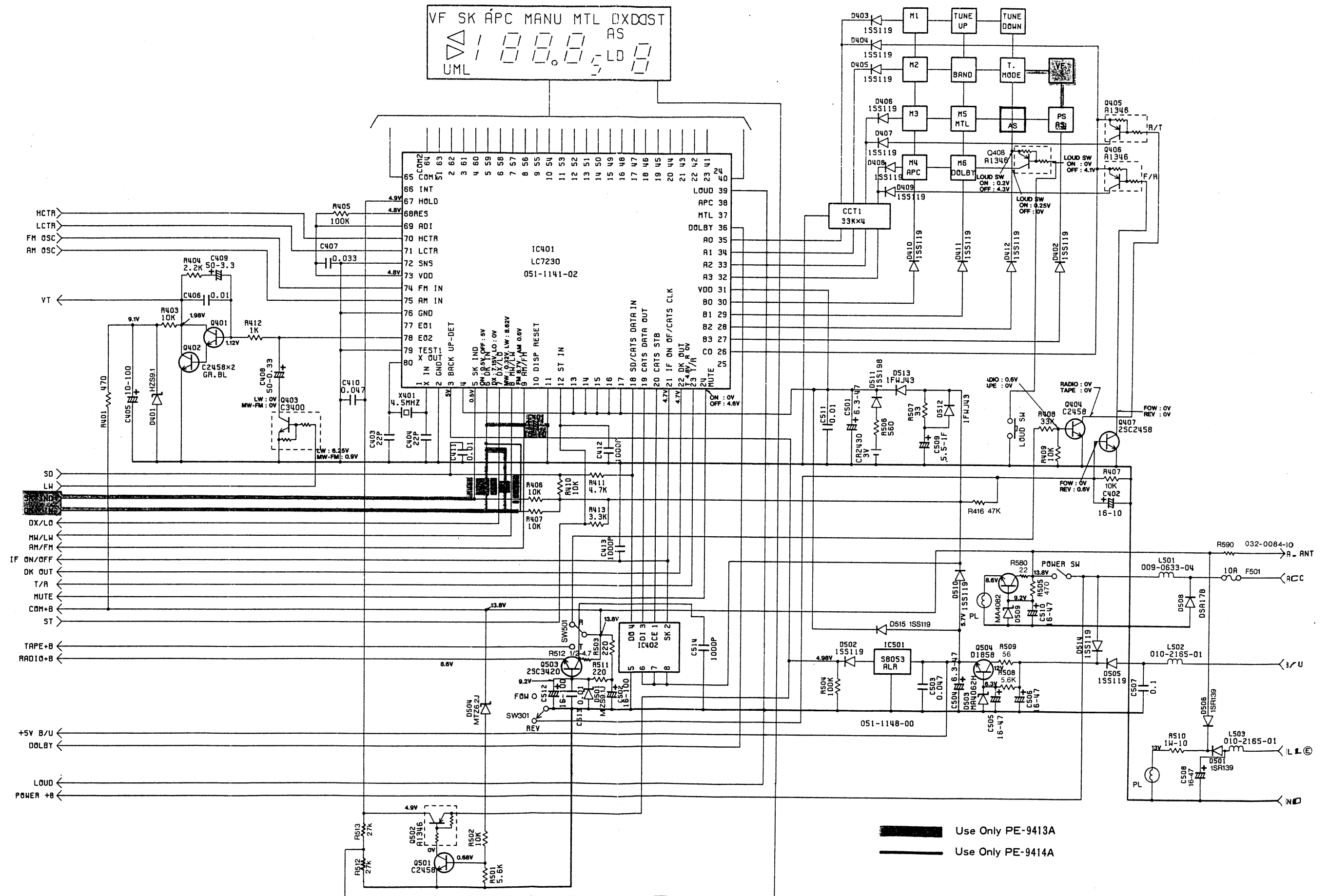
CIRCUIT DIAGRAM: 2/2

• PE-9411A-A • PE-9412A-A



CIRCUIT DIAGRAM: 1/2

● PE-9413A-A · PE-9414A-A



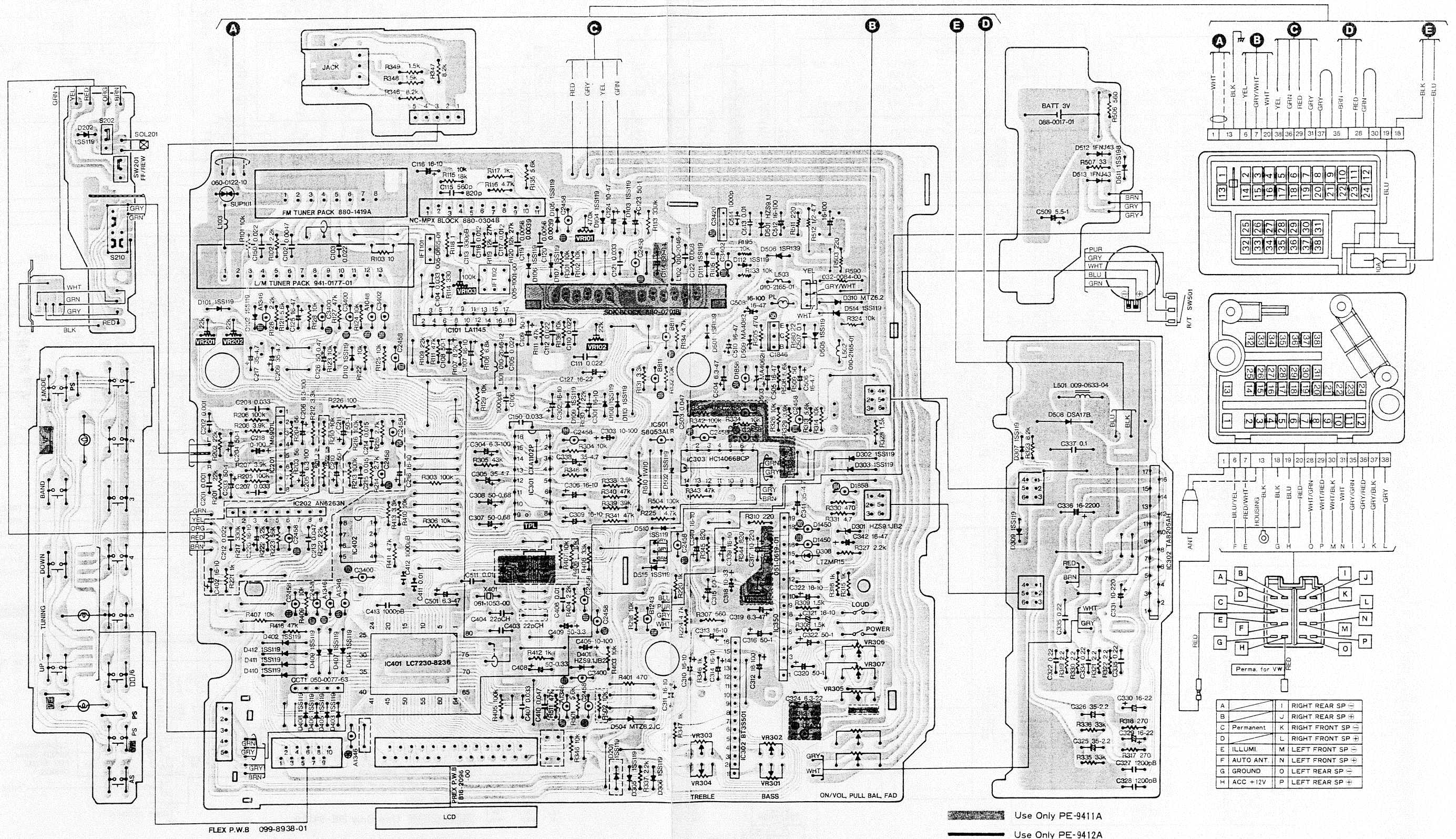
Use Only PE-9413A
Use Only PE-9414A

● PE-9413A-A • PE-9414A-A



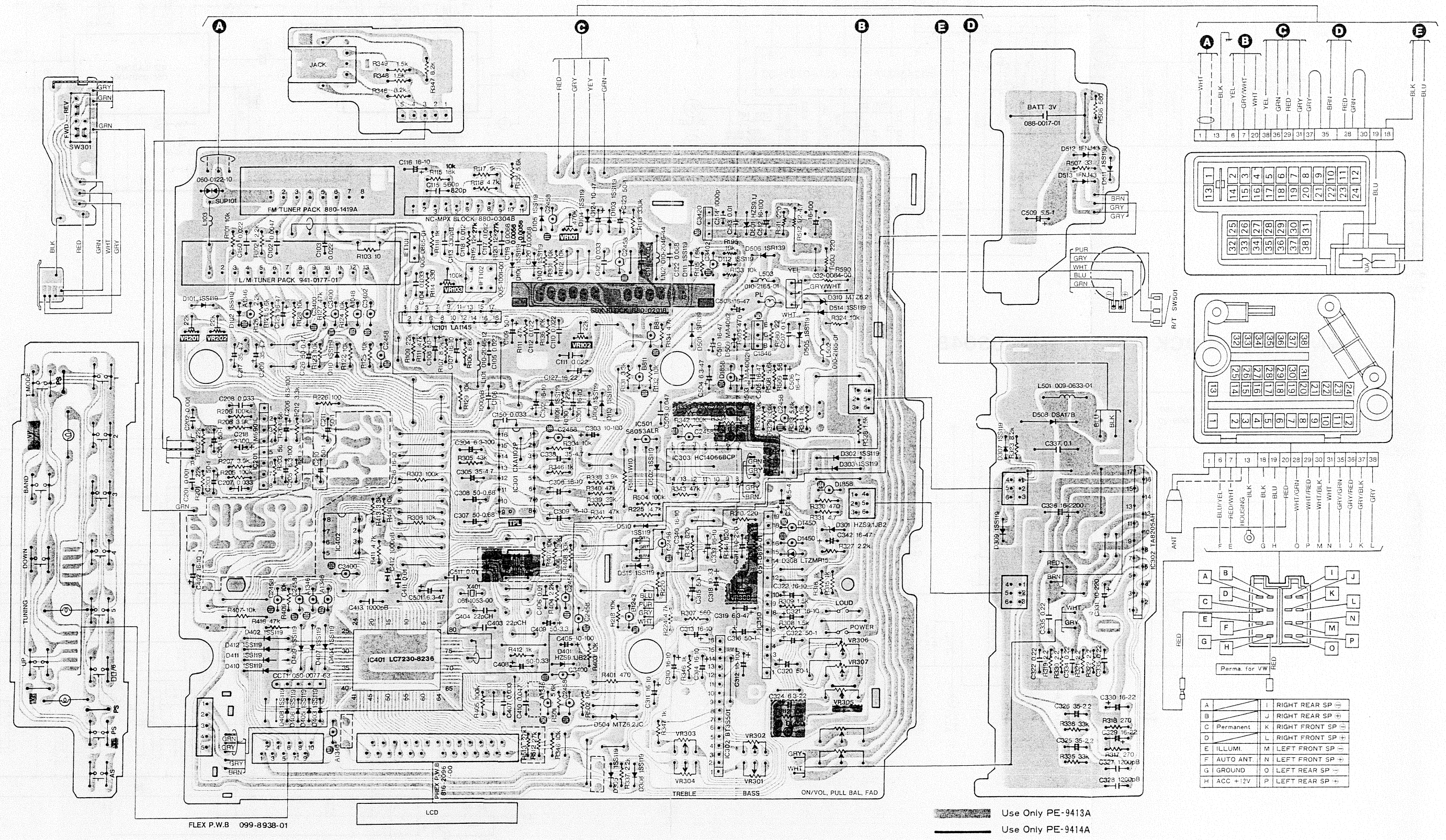
PRINTED WIRING BOARD:

• PE-9411A-A • PE-9412A-A



■ PRINTED WIRING BOARD:

● PE-9413A-A • PE-9414A-A



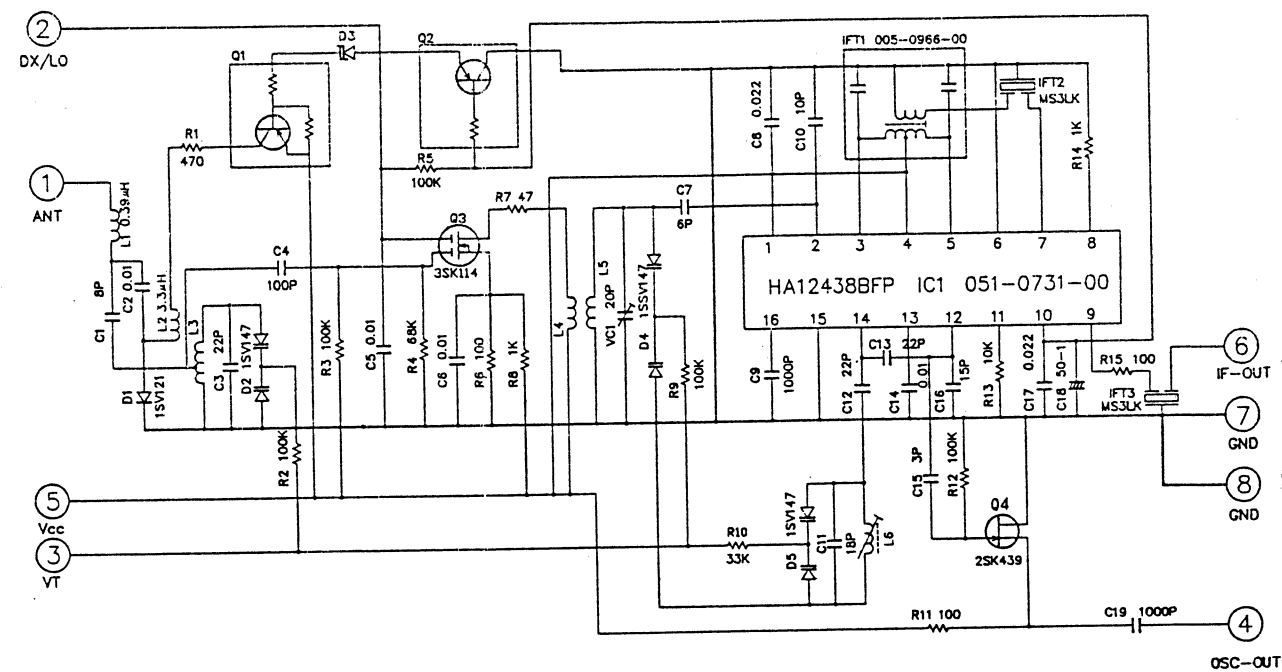
FLEX P.W.B 099-8938-01

LCD

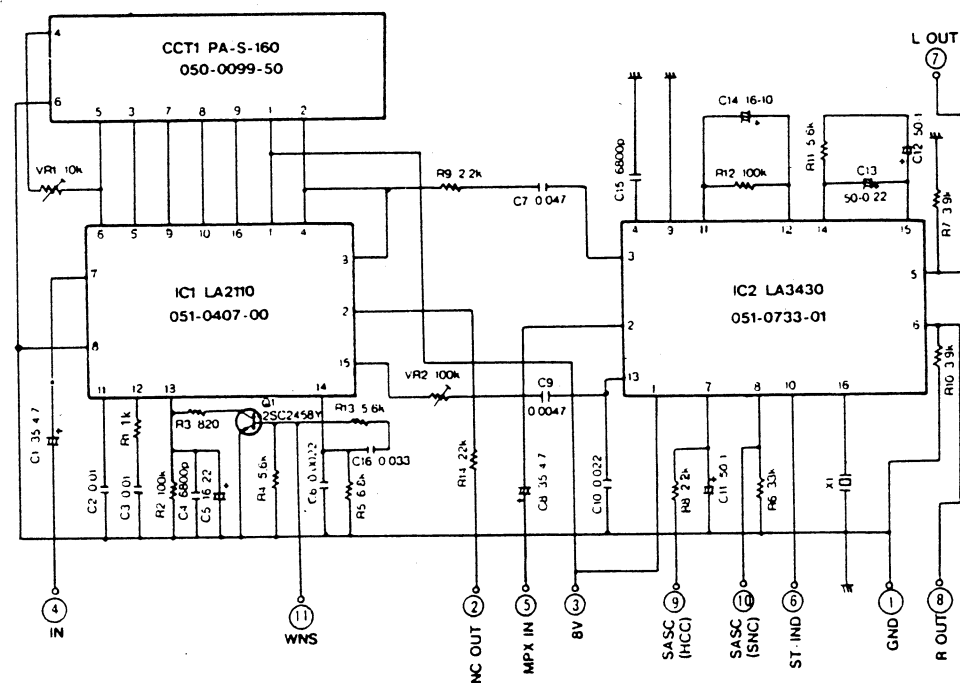
Use Only PE-9413A
Use Only PE-9414A

A	I	RIGHT REAR SP	→
B	J	RIGHT REAR SP	→
C	Permanent	K	RIGHT FRONT SP
D	L	RIGHT FRONT SP	→
E	ILLUMI	M	LEFT FRONT SP
F	AUTO ANT	N	LEFT FRONT SP
G	GROUND	O	LEFT REAR SP
H	ACC +12V	P	LEFT REAR SP

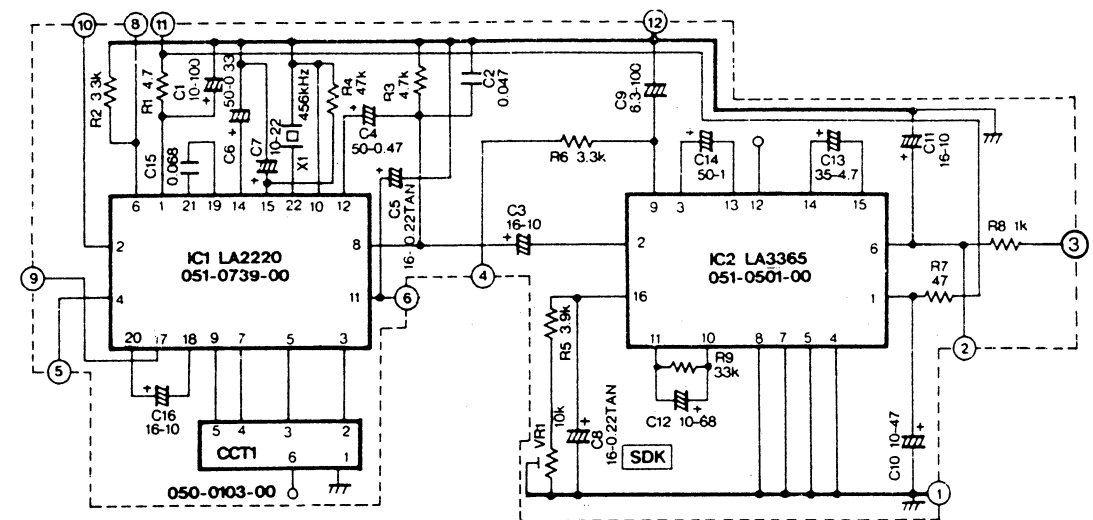
■ FM TUNER PACK: 880-1419A



■ NC MPX BLOCK ASS'Y: 880-0304B



■ SDK BLOCK ASS'Y 880-0201B



■ MW/LW TUNER PACK: 941-0177-01

